

## CLAIMS

1. A disk apparatus comprising a rotor frame in which disk holding member is placed on a center of an upper surface of said rotor frame, a shaft mounted on a center of said rotor frame, a bearing metal which holds said shaft, a holder which is disposed on an outer periphery of said bearing metal and which holds said bearing metal, a stator disposed on an outer periphery of said holder, a magnet fixed to said rotor frame at a location opposed to said stator, and a thrust cap fixed to a center of a lower portion of said holder, in which an outer periphery of the lower portion of said holder is swaged and fixed to a motor plate, and said shaft is disposed between said disk holding member and said thrust cap, wherein

said rotor frame at the location opposed to said bearing metal is projected toward said disk holding member, thereby forming a bearing metal space in a lower portion of a center of said rotor frame, and an upper end of said bearing metal is brought closer to said rotor frame.

2. The disk apparatus according to claim 1, wherein a recess is formed in said thrust cap at a location opposed to said shaft.

3. The disk apparatus according to claim 2, wherein a protrusion is formed on a center of a lower end surface of said shaft, and a protrusion projecting toward said shaft is formed on a center of the recess of said thrust cap at a location opposed to said shaft.

4. The disk apparatus according to claim 2, wherein a lower end surface of said shaft is formed into a spherical shape, thereby forming said protrusion, and an upper surface of the recess of said thrust cap is formed into a spherical shape, thereby forming said protrusion.

5. The disk apparatus according to claim 2, wherein a lower

end surface of said thrust cap by said recess has the same height as that of a lower end surface of the swaging portion of the thrust cap of said holder.

6. The disk apparatus according to claim 2, wherein a thrust sheet which is thinner than a recess amount of said thrust cap is provided between said thrust cap and said shaft.

7. The disk apparatus according to claim 2, wherein an upper surface of the recess of said thrust cap or a lower end surface of said shaft is coated with a fluorine-based lubricating paint or tungsten.

8. The disk apparatus according to claim 1, wherein a hole or a recess is formed in a motor plate at a location corresponding to a convex portion of an insulator of a coil constituting said stator.

9. The disk apparatus according to claim 1, wherein a thickness of a projection of said rotor frame located above said bearing metal is made thinner than a basic thickness of said rotor frame by drawing operation or crushing operation.

10. The disk apparatus according to claim 1, wherein a side of said motor plate located outside from an outer periphery of said rotor frame is projected toward said rotor frame.

11. The disk apparatus according to claim 1, wherein said motor plate is projected toward said rotor frame by drawing outside of said motor plate from an outer periphery of said rotor frame.

12. The disk apparatus according to claim 1, wherein said rotor frame is subjected to nitrogen processing.